

CONTINUATION SHEET TO PTOL-413A
APPLICANT INITIATED INTERVIEW REQUEST FORM

Re: Appln. No. 10/773,944
Applicant: Ho-Shang LEE et al.
Art Unit: 3663

Claims 1 and 39 differentiate over Erchak in that Erchak fails to teach or suggest a cladding layer between the active layer and the photonic crystal structure. Use of waveguide structure formed by the active layer, waveguide layer and the two cladding layers in LED goes against conventional LED thinking. Use of such waveguide structure together with photonic crystal structure enhances light extraction, since the waveguide structure will limit the possible optical modes that correspond to the band edge of the photonic crystal structure.

DBR layer in Erchak is used to reflect and only reflects normal incident light, and does not form a waveguide. Light that is incident on the DBR layer in Erchak at angles other than 90 degrees is not reflected but passes through it. DBR layer in Erchak is thus not a waveguide.

Proposed claim amendment:

1. (previously presented) A solid state light emitting diode device comprising:
 - an active layer emitting incoherent light in response to current injected into the layer;
 - a first structure comprising at least one waveguide layer adjacent to the active layer and two cladding layers wherein said active layer and said at least one waveguide layer are located between the two cladding layers, said structure trapping the incoherent light generated by the active layer; and
 - a second structure comprising a photonic crystal structure adjacent to the first structure extracting the incoherent light that is trapped by the first structure and outputting incoherent light.

33. (previously presented) A solid state light emitting device comprising:
an active layer emitting light in response to current injected into the layer;
a first structure adjacent to the active layer, said structure trapping the light generated by the active layer;
a substrate layer; and
a second structure adjacent to the first structure extracting the light that is trapped by the first structure, wherein the substrate layer has a band gap that is wider than that of the active layer, so that light emitted by the active layer is not absorbed significantly by the substrate layer, and so that light emitted by the active layer is emitted from both sides of the device, wherein the substrate layer is separated from the active layer by portions of the first and second substrates the second structure comprises holes that extend through the first structure and the active layer to a region between the substrate and active layers, wherein the light extracted by the second structure and outputted from the device is incoherent.

39. (previously presented) A method for emitting light, comprising:
injecting electrical current into an active layer, causing the layer to emit incoherent light in response to the current injected into the layer;
trapping the incoherent light generated by the active layer by means of at least one waveguide layer and two cladding layers wherein said active layer and said at least one waveguide layer are located between the two cladding layers; and
extracting by means of a photonic crystal the incoherent light that is trapped by the at least one waveguide layer to output incoherent light.